SQL Important Concepts

Stored Procedures

Functions

Window Functions

CTE

EXISTS vs IN

ACID Properties

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Stored Procedure vs Function

- Stored Procedure:
  - Can return multiple values
  - Supports transactions
  - Used for complex business logic

- Function:
  - Returns a single value (scalar/ table-valued)
  - Cannot manage transactions
  - Often used inside queries

Window Functions

- Definition:
- Functions applied over partitions of data.

- Examples:
  - ROW_NUMBER()
  - RANK()
  - DENSE_RANK()
  - LEAD(), LAG()

Common Table Expression (CTE)

- Definition:
- Temporary result set defined within a query.

- Uses:
  - Simplifies complex queries
  - Supports recursion
  - Improves readability

EXISTS vs IN

- IN:
  - Compares a value with a list of values.
  - Good for small datasets.

- EXISTS:
  - Checks for existence of rows in a subquery.
  - Efficient for large datasets.

ACID Properties in SQL

- Atomicity: All operations in a transaction are completed or none.

- Consistency: Ensures data validity before and after transaction.

- Isolation: Concurrent transactions execute independently.

- Durability: Once committed, data remains permanent.